REMARKS

Claims 52-65, 68, 72-75 are pending. Claims 1-51 have been cancelled. Claims 66, 67, 69-71, 76 and 77 have been withdrawn.

Claims 52, 61 and 63 have been amended to correct the informalities pointed out by the Examiner.

In regard to claims 65 and 68, the reason that r and t were added to the list of variables is because in claim 6 as originally filed, n was defined as being 1-6 and 2-6 (line 3 under the structure of formula (I)); and 0-2 in line 7 under the structure of formula (I). Clearly, n cannot have different definitions in one claim. r and t were added to replace n and r is defined as 2-6 and t is defined as 0-2. n is defined as 1-6.

The provisional double patenting rejection is noted. However, applicants will defer responding to this rejection until the Examiner indicates that one or more claims in this application are allowable.

Claims 52-62, 64-65, 68, and 74-75 are rejected under 35 USC 102(b) as anticipated by or, in the alternative, under 35 USC 103(a) as obvious over Vasiliskov, et al., Fabrication of Microarray of Gel-Immobilized Compounds on a Chip by Copolymerization, Biotechniques, 27: 592-606, 1999 This is respectfully traversed.

First, the Examiner did not make quite clear the content of compositions for making biochips by photo-initiated polymerization employed in the work by: AN. Vasiliskov, E.N. Timofeev, S.A. Surzhikov, A.L. Drobyshev, V.V. Snick, and A.D. Mirzabekov, BioTechniques, 1999, V. 27, P. 592-606.

The Examiner provided the following content of the composition with reference to the abstract, Materials and Methods; Figures 2-3: acrylamide (A), bisacrylamide (B), TEMED (D), water, and glycerol.

In fact, the content of the composition cited in the article is as follows (p. 594, paragraph "The oligonucleotide copolymerization solution..."; p. 596 "The protein copolymerization solution...": acrylamide (A); bisacrylamide (B); allyl- or butendiololigonucleotides (or acryloylmodified protein) (C); glycerol and sodium phosphate buffer (or glycerol and Tris-HCI, HCl, EDTA) (D, E); TEMED and methylene blue.

The Examiner, described TEMED - a promoter of photo-initiated polymerization to a medium (solvent) for photo-initiated polymerization and omitted methylene blue - a photo-initiator cited in the article, having defined the role thereof as a source of radicals (p. 600 "We used methylene blue as a source of radicals..."). According to col. 3, on page 592 of the reference, the arrays of polyacrylamide gel are produced by persulfate or photo-induced polymerization. This differs from the claimed biochips.

In other words, the claims to the biochips contain neither a promoter of polymerization, nor a photo-initiator, in contrast to what is described in the reference.

Secondly, the biochips contain oligonucleotides containing methacrylamide fragment but not an allyl one, which is described in the reference.

Thus, the absence of a promoter and a photo-initiator in the biochips of the claims and the use of oligonucleotides with a terminal methacrylamide group therein not only failed, unexpectedly, to degrade the compositions properties but made it possible to gain some advantages described in the work by: A.V. Vasiliskov, E.N. Timofeev, S.A. Surzhikov, A.L. Drobyshev, V.V. Snick, and A.D. Mirzabekov, BioTechniques, 1999, V. 27, P. 592-606, namely: The compositions are capable of polymerizing via photo-initiation upon irradiation in the ultra-violet region even in the absence of promoters and photo-initiators. The compositions can polymerize in a longer wave region upon UV- irradiation at a wavelength of > 312 nm on glass and in a dry oxygen-free atmosphere

An advantage of the claimed biochips is that they do not contain either a promoter or a photo-initiator and, consequently, can not undergo initiation with UV-radiation at a

certain wavelength, which makes it possible to store and use the compositions in visible light, whereas methylene blue, employed in the cited reference is a photo-initiator of not only in the UV region, but also in the visible light and, consequently, makes it difficult to store and use these compositions, etc.

Therefore, as all elements of the claims are not disclosed in the reference and the claims are not obvious in view of this reference, it is respectfully requested that this rejection be withdrawn.

Claims 52-62, 64-65, 68, and 74-75 are rejected under 35 USC 103(a) as obvious over Rehman et al., Immobilization of acrylamide-modified oligonucleotides by co-polymerization, Nucleic Acids Research 27(2): 649-655, 1999 . This is respectfully traversed.

First, in the work by Rehman et al., Immobilization of acrylamide-modified oligonucleotides by co-polymerization, Nucleic Acids Research, 27(2): 649-655, 1999, the Examiner noted the content of compositions for making biochips by chemically initiated polymerization, but not by photopolymerization, as is claimed in this application.

The Examiner cited the following content of the composition with reference to the abstract, Materials and Methods, Figures 2-3; Figure 1: acrylamide (A), bisacrylamide (B), acrylamidemodified DNA (C), APS, and TEMED (D), water, and glycerol.

However, even in such variant, when describing the composition content, the Examiner misused the designations for the components of the claimed biochips. There is no disclosure of a photo- or a chemical initiator and APS (ammonium persulfate) and TEMED in the subject application.

As regards a composition for photo-initiated polymerization cited in the work by Rehman et al., this composition differs from the claimed biochips. The composition of Rehman is as follows:

acrylamide (A), bisacrylamide (B), 5'-acrylamide oligonucleotide (C), glycerol and phosphate buffer (D, E), and riboflavin. This composition, similar to that used in the work by A.V. Vasiliskov, E.N. Timofeev, S.A. Surzhikov, A.L. Drobyshev, V.V. Snick, and A.D. Mirzabekov, BioTechniques, 1999, V. 27, P. 592-606, contains a photo-initiator. However, methylene blue is replaced by riboflavin, which also can be initiate photo-polymerization both in the UV and in the visible regions.

Secondly, the claimed biochips contain oligonucleotides containing a methacrylamide fragment, but not an acrylamide fragment as described in the cited reference. It is well-known that a methacrylamide fragment is resistant to nucleophilic and electrophilic agents, whereas an acrylamide group reacts easily with nucleophilic and electrophilic agents, which leads to decreased stability. (General Organic Chemistry, v. 3, Nitrogen-Containing Compounds, Ed. N.K. Kochetkov, Moscow, Khimiya, 1982, pp.61-62).

This is another advantage of the claimed invention as compared to what is disclosed in the cited reference.

Therefore, it is respectfully requested that this rejection be withdrawn.

Claims 52-65, 68, and 72-75 are rejected under 35 USC 102(a) as anticipated by or, in the alternative, under 35 USC 103(a) as obvious over Abrams, et al. U.S. application publication 2003/0143569 published June 31, 2003.

Abrams, et al July 31, 2003, is not properly cited. An English translation of the priority application was filed and a certified copy of the PCT application and English translation will be provided.

Abrams et al., describes the immobilization of acrylamidecontaining oligonucleotides in already prepared gels containing thiol groups; in other words, the compositions used for the preparation of hydrocarbon gels containing thiol groups contain no oligonucleotide (see the abstract; Figures 1 and 8-9; paragraphs 13-51, 56-68, 79, 92-123, 129131; Examples 1-18).

This differs from the claimed invention.

Thirdly, even if one ignores the fact that the patent compositions used for the preparation of gel contain no oligonucleotide and considers the content of the claimed compositions and a method of polymerization thereof, the compositions content (acrylamide-modified DNA (C), acrylamide and 2-hydroxyethylmethacrylate (A), methylenebisacrylamide (B), DMF or DMSO (D), water, and glycerol), acrylamide-modified DNA (C) are not a component of a composition for the preparation of a gel; the components the Examiner omitted should be indicated: ammonium persulfate (APS) and N,N,N',N'-tetramethylethylenediamine (TEMED) (Examples 5-10, 12-14, 18).

In addition, it is noted that this is used for chemical initiation of polymerization similar to Rehman et al., Immobilization of acrylamide-modified oligonucleotides by co-polymerization, Nucleic Acids Research, 27(2): 649-655, 1999 and, such compositions do not have sufficient storage stability.

Therefore, it is respectfully requested that this rejection be withdrawn.

Claims 52-65, 68, and 72-75 are rejected under 35 USC 103(a) as being unpatentable over Vasiliskov, et al., Fabrication of Microarray of Gel-Immobilized Compounds on a Chip by Copolymerization, Biotechniques, 27: 592-606, 1999 (provided by applicants in the IDS) and Solomon, et al. U.S. Patent 6,585,873. This is respectfully traversed.

First, the Examiner, when providing the content of compositions of the patent Solomon et al. U.S. 6,585,873 (the abstract; Figure 1; columns 1-2, 6-7, 9; Examples 1-20), along with acrylamide, N,N'-methylenebisacrylamide, DMF, glycerol, and water, did not mention ammonium persulfate (APS) and tetramethylethylenediamine (TEMED) - an initiator and a promoter of (see Example 7 Method A) chemical initiation of polymerization; and did not mention photoinitiators with promoters of photo-initiation, namely: RBF, STS and DPIC or TEMED (see Example 7 Method B);

Second, the compositions described in the reference did not contain oligonucleotides with an unsaturated group and were used only for making hydrocarbon gels for electrophoresis but not for making biochips.

In view of the aforesaid, all of the compositions cited from:

A.V. Vasiliskov, E.N. Timofeev, S.A. Surzhikov, A.L. Drobyshev, V.V. Shick, and A.D. Mirzabekov, BioTechniques, 1999, V. 27, P. 592-606;

Rehman et al., Immobilization of acrylamide-modified oligonucleotides by copolymerization, Nucleic Acids Research, 27(2): 649-655, 1999;

Abrams et al., July 31, 2003.

Solomon et al. U.S. 6,585,873,

irrespective of a method of initiating, contain an initiator and a promoter of chemical or photo-initiation, whereas the claimed biochips contain neither initiators nor promoters and are readily polymerized by UV-irradiation. The absence of initiators in compositions results in many advantages thereof, namely:

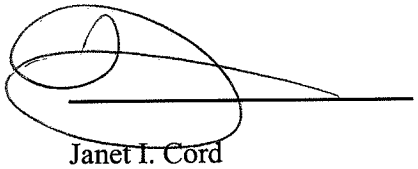
the compositions undergo initiation only by UV irradiation and, as a result, may be stored and used in the visible light;

a photo-initiator may be involved in the chain transfer reaction to form a gel and, consequently, may be embedded in the composition thereof and, as a result to add "light" in hybridization with a fluorescence probe sample on gel elements of a biochip.

Therefore, it is respectfully requested that the rejections be withdrawn.

It is submitted that the application is in condition for allowance and favorable consideration is respectfully requested.

Respectfully submitted,



Janet I. Cord
Ladas & Parry LLP
26 West 61st Street
New York, New York 10023
Reg. No. 33778 (212) 708-1935